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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TORSTEN WAHLER

Appeal 2009-012235
Application 10/537,905
Technology Center 3600

Before: STEVEN D.A. MCCARTHY, KEN B. BARRETT, and
FRED A. SILVERBERG, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

STATEMENT OF CASE

Appellant appeals under 35 U.S.C. § 134 from a rejection of claims 1 and 4. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

The claims are directed to gearing. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A gearing comprising:

a fixed, internally toothed internal gear;

an annular, flexible toothed band arranged so as to engage with the toothing of the internal gear, the toothed band having fewer teeth than the internal gear;

a rotatable wave generator arranged to transmit a force to the toothed band via a tappet gear such that a relative motion of the toothed band with respect to the internal gear results from a rotation of the wave generator,

a mating gear; and

driving pins shaped on a lateral face of the toothed band and arranged to engage in recesses in the mating gear,

wherein axes of the wave generator and of the mating gear are parallel,

wherein the recesses in the mating gear are radially extending grooves,

wherein each groove has an outer edge and an inner edge,

wherein a difference between the outer edge and the inner edge on a circular arc does not equal zero, and

wherein the difference is selected so that an outer distance between opposing outer edges of a groove is larger than an inner distance between opposing inner edges of a groove.

REFERENCES

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Stall	US 5,779,551	Jul. 14, 1998
Hirn	US 6,220,115 B1	Apr. 24, 2001
Fischer ¹	DE 4038555 A1	Jun. 11, 1992

REJECTIONS

Claim 1 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Fischer and Stall. Ans. 3.

Claim 4² stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Fischer, Stall, and Hirn. Ans. 4.

OPINION

Regarding claim 1, the Examiner correctly found that Fischer discloses the basic device claimed except for the specific geometry of the mating gear grooves. Ans. 3. The Examiner correctly concluded that modifying Fischer's groove geometry to have the claimed shape would have been obvious to one of ordinary skill in the art. Ans. 4, 10.

The description of the mating gear grooves in claim 1 amounts to one of a finite number of possibilities for using, for example, a trapezoidal tooth shape. See, e.g., Spec. fig. 5. Although Fischer does not specifically discuss

¹ References to "Fischer" are to the translation entered into the record on June 12, 2009.

² Claim 4, as set out in Appellant's Claims Appendix, does not indicate the claim from which it depends. This appears to be a typographical error. See Amendment (Mar. 4, 2008) (identifying claim 1 in dependent claim 4). Clarification should be considered in any further prosecution. We presume for purposes of this appeal that claim 4 depends from claim 1.

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groove profiles for the clutch disk 4, read as the claimed “mating gear,” Fischer demonstrates that trapezoidal tooth shapes are known alternatives to flat or acute shapes in transmission components. Fischer 5:11-12. Fischer also notes that the groove width influences the play in the gear. Fischer 4:23-25. Stall depicts a trapezoidal tooth profile. Stall, fig. 4a. Substituting Stall’s profile for Fischer’s amounts to the simple substitution of known elements and would yield the predictable result of altering the contact angle, and/or play, between components. Such a substitution would therefore have been obvious to one of ordinary skill in the art.

Appellant and the Examiner are in agreement that Fischer does not specifically disclose the claimed profile on Fischer’s clutch disk 4. App. Br. 5; Ans. 9. Fischer does not specifically describe the profile depicted in figure 4, but appears to regard this profile as “flat” and not “trapezoidal.” Fischer 4:22-23; contra App. Br. 6 and Reply Br. 2. In any case, the Examiner correctly points out that, unless otherwise noted, patent drawings are typically not to scale. Ans. 3; see Hockerson-Halberstadt, Inc. v. Avia Group Int’l, 222 F.3d 951, 956 (Fed. Cir. 2000).

Appellant’s argument that Stall fails to demonstrate the claimed groove structure on a “mating gear” (App. Br. 6-7; Reply Br. 2-3) is an argument that no single reference discloses the claimed structure. The test for obviousness is not whether the claimed invention is expressly suggested in any one or all of the references, but whether the claimed subject matter would have been obvious to those of ordinary skill in the art in light of the combined teachings of those references. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). To the extent Appellant is arguing the radial direction of Stall’s grooves precludes them from being applied to a “mating gear,” we agree with the Examiner that this is not precluded by the claim. Ans. 10; See

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In re Self, 671 F.2d 1344, 1348 (CCPA 1982) (limitations not appearing in the claims cannot be relied upon for patentability).

Regarding Appellant's argument that Stall lacks an "inner edge," (App. Br. 7) we agree with the Examiner that it is reasonable to characterize the boundary between the linear and curvilinear portions of the gear tooth as an "edge" (Ans. 8, 11). Furthermore, the term "trapezoidal" would have suggested a shape whose edges are formed by the intersection of two lines.

Appellant has not provided sufficient support to establish that the Examiner erred by interpreting Fischer's clutch disk 4 as the claimed "mating gear." App. Br. 5. To the extent that Appellant argues that it was unreasonable to characterize Fischer's clutch members 6 as "pins," we agree with the Examiner that such an interpretation is not precluded by the claim. Ans. 9-10. Furthermore, Fischer expressly suggests replacing this structure with "bolts," which are also reasonably read as the claimed "pins." See Fischer 4:26-27.

Regarding claim 4, Appellant argues that the tertiary reference Hirn fails to cure the deficiency in the rejection of independent claim 1, from which claim 4 depends, and that there is no reason to modify the primary and secondary references to arrive at the subject matter of claim 1 . App. Br. 7-8. For the reasons discussed above, these arguments are not persuasive. Appellant also asserts that "because of the additional inventive features recited in dependent claim 4 that depends from claim 1, Appellant submits that dependent claim 4 is patentable." Id. This conclusory argument does not address with any specificity the Examiner's findings or reasoning regarding claim 4 (Ans. 4), and therefore does not persuade us of error in the rejection.

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DECISION

For the above reasons, the Examiner's rejections of claims 1 and 4 are affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). See 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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